



Small-scale patches of hypoxic sediments: a comparison of diversity of patch-associated and background meiofauna

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Small-scale patches of black-coloured hypoxic sediments are a common event in shallow (8-10 m depth) waters of Omega Bay (SW Crimea, the Black Sea). Our monitoring of these habitats showed that their location, time (weeks to months) and spatial (metres) scales were changeable and affected by local hydrological regime. Presence of methane of unknown source and sulphate-reducing activity were detected in the patch samples. Redox potential in the patch surface sediments occasionally dropped to -250 mV. In order to determine whether the patch-dwelling meiofauna has a specific taxonomic composition different from those in the margin habitats, we compared diversity (20 major taxonomic groups) and abundance of meiobenthic communities from the centre and periphery of the hypoxic patches and margin sediments. Benthic samples were taken monthly in 2005 at two stations in the bay. The patch and margin communities were shown to differ in terms of taxonomical composition and abundance in most sample sets collected at the same time. Outbreaks of different taxons in the patches (Harpacticoida, Tardigrada, Foraminifera) and margins (Harpacticoida, Bivalvia) were not correlated in time. The lowest meiobenthic abundances were recorded for the border habitats with the most unstable environmental conditions and the strongest gradients of Eh and oxygen concentration. On a longer time scale (months), however, all the studied communities demonstrated the same wide range of variability in terms of taxon richness (ACE index: 6 to 23), diversity (Shannon MLE: 0.12 to 1.14) and taxonomic composition. Nematoda was the dominant group (5 to 120 '104 ind. m⁻²) in most samples. We suggested that at the scale of a few metres, the hypoxic patch habitats could not support stable (over long time scale) and highly specialized meiobenthic community distinct from those in margin sediments.